REGISTER OF METEOROLOGICAL OBSERVATIONS UNDER THE DIRECTION OF THE SMITHSONIAN INSTITUTION, ADOPTED BY THE COMMISSIONER OF PATENTS, FOR HIS AGRICULTURAL REPORT.

112 268

Place of Observation Washington Richmond County of Henrico State of Virginia

For the Month of November 1859

Latitude ..... Longitude ..... Height above the sea .....

Name and address of Observer Chas. I. Meriwether Washington Richmond Virginia

Day of Month.	Barometer: Observed Height 7 a.m.	2 p.m.	9 p.m.	Thermometer attached to Barometer 7 a.m.	2 p.m.	9 p.m.	Barometer height reduced to freezing point 7 a.m.	2 p.m.	9 p.m.	Mean.	Thermometer in the open air 7 a.m.	2 p.m.	9 p.m.	Mean.	Psychrometer, or Hygrometer: Dry bulb 7 a.m.	2 p.m.	9 p.m.	Wet bulb 7 a.m.	2 p.m.	9 p.m.	Rain and Snow: Time of beginning of rain or snow.	Time of ending of rain or snow.	Amount of rain or melted snow in gauge, in inches.	Depth of snow, in inches.
1											32	49	38		clear cool morning; very a little cloudy									
2											29	53	43		fog; morning clear fine day									
3											34	59	49		" " " "									
4											41		65		clear but smoke Indian Summer									
5											44	72	57		" " " " "									
6											54	60	48		" " " " "									
7											45	57	54		a little cloudy									
8											52		52		cloudy day									
9											51	60	56		cloudy morning; a little sprinkle of rain about 7 A.M.									
10											55	69	60	61.33	cloudy morning clear mild day									
11											53	60	51		" " " " "									
12											45	68	61		a little cloudy, very mildly Indian Summer									
13											63	49	36		cloudy morning light rain about 8 A.M. cleared									
14											22	44	35	33.67	clear cool									
15											36	53	41		cloudy morning clear fine day									
16											29	56	44		clear fine day									
17											34		56		a little cloudy, very mildly Indian Summer									
18											54	61	64		cloudy + misty day rain in the night								1/2	
19											55	65	56		clear windy day									
20											46	60	48		clear calm day									
21											38	52	54		fog; morning, cloudy day, rain commenced at 2 P.M. light rain								1.1	about 6 P.M. hour rain
22											50½		53		cloudy morning, clear fine day									
23											49	64	49		clear fine day									
24											36	51	40		" " "									
25											30		44		foggy morning rather cloudy day									
26											54	64	56		cloudy morning clear fine day									
27											30	32	41		cloudy day some light sprinkling									
28											44	54	42		rather cloudy morning clear fine day									
29											31	51	44		cloudy morning clear fine day									
30											43	64	52		rather cloudy									
31																								
Sums.											1299.5	1467.5	1484											
Means.											43.32	50.79	49.47	50.24										

Day of Month.	Clouds: 7 A.M. Amount of cloudiness.	Course of higher clouds.	Velocity.	Kind of clouds.	2 P.M. Amount of cloudiness.	Course of higher clouds.	Velocity.	Kind of clouds.	9 P.M. Amount of cloudiness.	Course of higher clouds.	Velocity.	Kind of clouds.	Winds: 7 A.M. Direction	Force.	2 P.M. Direction	Force.	9 P.M. Direction	Force.	Force or Pressure of Vapor in Inches. 7 a.m.	2 p.m.	9 p.m.	Relative Humidity, or Fraction of Saturation. 7 a.m.	2 p.m.	9 p.m.
1																								
2																								
3																								
4																								
5																								
6																								
7																								
8																								
9																								
10																								
11																								
12																								
13					a sudden change about 12 M. a dash from the west. Clear off clear with high cirrus, but little cirrus								4	M	5	25								
14																								
15																								
16																								
17																								
18							W	6							S W	25								
19																								
20																								
21					about 6 P.M. hour rain																			
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EXPLANATION OF THE ABOVE COLUMNS.

BAROMETER.

Observed Height.—Under this head are entered the records of observations made on the barometer at three hours daily—7 a m, 2 p. m., and 9 p. m.

Thermometer attached to Barometer.—Under this head are the records of the thermometer attached to the barometer, observations of which are necessary to correct the barometer for variations in height of the mercury on account of difference of temperature.

Barometer reduced to Freezing Point.—In this space are placed the figures which indicate the observations on the barometer reduced to the height at 32° Fahrenheit, by means of a table; and also the mean or average of the three reduced daily observations.

THERMOMETER IN THE OPEN AIR.

This is intended for the register of the standard thermometer, and for the daily mean or average of the three observations.

PSYCHROMETER, OR HYGROMETER.

Under this head are entered the records of the dry and wet-bulb thermometers, from which the "Force of Vapor" and "Relative Humidity" are obtained by means of tables.

RAIN AND SNOW.

Under this head are entered the time of beginning and ending of the fall of rain or snow, and the amount, in inches and hundredths, of rain or melted snow collected in a gauge at the surface of the ground; also the depth of the snow.

CLOUDS.

Under this general head are entered three daily observations on the aspect of the sky, &c. 1st. The "Amount of cloudiness," designated by figures, 10 being entire cloudiness; 5 half cloudiness; and 0 entire clearness. 2d. "Course of the higher clouds," which pass directly over the head of the observer, as given to eight points of the compass. This observation is important, as the course of the *higher clouds* is sometimes different from that of the *surface wind*, which is given in another column. 3d. The "Velocity," or rate of motion, 10 being the highest and 0 apparent rest. 4th. The description or "Kind of clouds," to be entered by means of the following abbreviations: *St.* Stratus; *Cu.* Cumulus; *Cir.* Cirrus; *Nim.* Nimbus; *Cir. st.* Cirro-stratus; *Cu. st.* Cumulo-stratus; *Cir. cu.* Cirro-cumulus.

WINDS.

This is for the record of the direction of the wind as indicated by a vane, and its force by estimation. The direction is entered in eight points of the compass: N., N.E., E., S.E., S., S.W., W. N.W. The force is to be estimated and registered by the following table, in figures, from 1 to 10:

1. Very light breeze	4 miles per hour.
2. Gentle breeze	8 " "
3. Fresh breeze	12 " "
4. Strong wind	25 " "
5. High wind	35 " "
6. Gale	45 " "
7. Strong gale	60 " "
8. Violent gale	75 " "
9. Hurricane	90 " "
10. Most violent hurricane	100 " "

FORCE OR PRESSURE OF VAPOR.

In this space are entered the numbers which indicate the inches of mercury of a barometer which the force of vapor of the atmosphere alone will sustain. The whole pressure of the atmosphere, as given under the head of "Barometer," is due, conjointly, to the weight of the air and the moisture which it contains. The figures under this table indicate the separate pressure of the moisture, and are obtained from the records of the wet and dry-bulb thermometers by means of a table based on experiment.

RELATIVE HUMIDITY, OR FRACTION OF SATURATION.

The quantity of water in a state of vapor which a given space can contain, depends on the temperature. When a given space has as much water as it can hold at a given temperature, it is said to be saturated with vapor. If the temperature be lowered, a portion of the vapor will be condensed into water, but the space will still be saturated. If the temperature be raised and no more vapor be admitted, the space will only be partially saturated. The numbers under the head of "Relative humidity" therefore denote the per-centage of saturation; full saturation being indicated by 1, and half saturation by 0.5. These figures are deduced from the corresponding forces of vapor by means of a table in the Smithsonian Collection.

[☞ SEE OTHER SIDE.]

Recd. Dec. 2. 1859